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RESEARCH REPORT

Catastrophising, pain, and disability in patients with nonspecific low back pain

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KEYWORDS
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Abstract *Background:* Attention has been drawn to examining the contributions of "catastrophising" to the prediction of pain and disability in individuals with low back pain (LBP).
Objectives: This study investigated the proportion of patients with LBP who engaged in catastrophic thinking about pain and its association with pain intensity and disability. We also investigated the components of pain catastrophising that is predictive of disability.
Methods: A total of 275 participants with nonspecific LBP completed the Pain Catastrophizing Scale, the quadruple visual analog scale, and the Revised Oswestry Disability Questionnaire (RODQ). The associations among pain intensity, disability, and catastrophising were investigated using *t* test. The components of catastrophising that best predicts disability were investigated using multiple linear regressions, and the level of significance was set at 0.05.
Results: The majority (85.5%) of the participants had LBP for more than 6 weeks, with 45.5% of the participants having moderate disability and 52.7% being high catastrophisers. High catastrophisers to pain had a significantly higher rating of pain intensity ($p < 0.001$) and higher score on the RODQ than low catastrophisers to pain. The main components of catastrophising that predicts disability were magnification ($p < 0.001$) and rumination ($p = 0.006$).
Conclusion: Clinicians should screen patients with nonspecific LBP for a heightened level of catastrophic thinking and endeavour to manage such when present.

Background

Nonspecific low back pain (NSLBP) is pain between the costal margins and the inferior gluteal folds, usually accompanied by painful limitation of movement, often influenced by physical activities and posture, and which may be associated with referred pain in the leg; moreover, this pain is not related to such conditions as fractures,

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spondylitis, direct trauma, or neoplastic, infectious, vascular, metabolic, or endocrine-related processes [1]. NSLBP accounts for 85% of back pain [2]. Chronic NSLBP is one that persists for at least 12 weeks, and this is mostly the case in a large proportion of patients with NSLBP [3]. Acute and subacute NSLBP have durations of $\leq$6 and 12 weeks, respectively. Management of low back pain (LBP) is a challenge for healthcare professionals as well as the healthcare system as a whole [4]. This may be associated with the high incidence and prevalence rates of LBP, as approximately 62–85% of adults experience LBP during their lifetime [5,6]. Patients with LBP often suffer from physical discomfort and functional limitations that might result in disability and suboptimal quality of life [6]. LBP can interfere with activity that ranges from basic activities of daily living such as walking and dressing to many work-related functions. It seems obvious that pain intensity (either chronic or acute) determines disability in patients with LBP; however, studies [4,7] have shown that the intensity of pain and the degree of disability do not correlate well, and both are associated with different risk factors [1].

Increased attention has been drawn to examining the contributions of "catastrophising" to the prediction of pain and disability in individuals suffering from chronic pain. Catastrophising has been broadly defined as an exaggerated negative orientation toward pain stimuli and pain experience [8,9]. Numerous clinical and experimental investigations in countries other than Nigeria have shown that catastrophising is associated with heightened pain experience [8,10–12]. A relationship between catastrophising and pain has been observed in several populations including patients with acute or chronic LBP [10]. A number of studies from cultures different from those of Nigeria have shown that measures of catastrophising are significantly correlated with objective and subjective measures of disability [11–14].

There is a dearth in documentary evidence on exaggerated negative orientation towards pain stimuli and pain experiences in patients with musculoskeletal pain (LBP inclusive) in Nigeria. Some studies [15,16] have reported negligible ethnic and racial differences in response to chronic pain when participants are closely matched on confounding variables such as sex and marital status. Furthermore, anecdotal information has revealed that certain tribal groups in Nigeria treat pain catastrophising as an alien concept or taboo. If there are no ethnic and racial differences in catastrophic thinking to pain, interventions used in minimising catastrophic thinking to pain is expected to be effective across racial and ethnic boundaries. It is noteworthy that although catastrophising is not acceptable as a regular behaviour trait, its presence is worsened by pain and manifests in the form of activity limitation [10]. This study, therefore, investigated the proportion of LBP patients who engage in catastrophic thinking to pain and its correlation with pain intensity and disability. We also investigated the components of catastrophising that is predictive of disability because knowledge of the predictor of pain catastrophising may be necessary to help tailor interventions for NSLBP (either acute or chronic) that may facilitate positive rehabilitation outcome. This study was anchored on the hypothesis that pain intensity and disability would not be significantly associated with extent of catastrophising in patients with NSLBP.

Methods

Study population and design

The sample size was determined using data from a previous study [17], where the proportion of the population of LBP patients was 0.62, and assuming an alpha of 0.05 and beta of 0.10 and a two-tailed test at a precision of 0.06. It was necessary to involve at least 252 participants in the study using the Kish [18] formula for estimating proportions. This study was designed as cross-sectional, documenting the proportion of patients who engage in catastrophic thinking to pain among patients receiving treatment for low back pain (NSLBP) at the physiotherapy outpatient clinic of the Federal Medical Centre Abeokuta and the State Hospital Ijaye Abeokuta. Participants were all consecutive patients (18 years of age) who had been diagnosed to have LBP of a nonspecific aetiology and were receiving treatment at the physiotherapy outpatient clinic between November 2012 and October 2013. Participants with evidence of red flags were excluded from this study. Participation in the study was totally voluntary, and the participants were asked to complete the Pain Catastrophizing Scale (PCS), the quadruple visual analogue scale (QVAS), and the Revised Oswestry Disability Questionnaire (RODQ) via interviews after their informed consent had been obtained. Ethics approval for the study was obtained from the Federal Medical Centre Health Research Committee. All procedures were conducted with strict adherence to the principles outlined in the Declaration of Helsinki.

The sociodemographic variables obtained in this study were sex, age, marital status, religious affiliation, and educational status. Marital status was categorised as married, single, divorced, and widowed. Educational status was divided into four levels: no education, primary education, secondary education, and tertiary education. The main anthropometric parameters measured were weight and height of the participants. The duration of NSLBP was measured as less than 6 weeks for acute pain, between 6 and 12 weeks for subacute pain, and more than 12 weeks for chronic pain.

Research questionnaires

The PCS was used to measure the degree of catastrophic thoughts about pain. Sullivan et al [9] developed the scale with three dimensions of pain catastrophising *vis-à-vis* rumination, magnification, and helplessness. This 13-item 5-point Likert scale has scores ranging from 0 (not at all) to 4 (all the time), relating the items to the past painful experience. Separate subscores for the dimensions (range, rumination 0–16; magnification 0–12; and helplessness 0–24 points) or a total score (range, 0–52 points) can be calculated for the PCS. Higher scores denote a higher degree of catastrophising. A score of 26 differentiates between high and low scores [9]. The PCS has been shown to have adequate to excellent internal consistency (Cronbach coefficient alpha: total PCS = 0.87, rumination = 0.87,